desired, part of the software, application logic and/or hardware may reside on a device, and part of the software, application logic and/or hardware may reside on the server. In an example embodiment, the application logic, software or an instruction set is maintained on any one of various conventional computer-readable media. In the context of this document, a "computer-readable medium" may be any media or means that can contain, store, communicate propagate or transport the instructions for use by or in connection with an instruction execution system, apparatus, or device, such as a computer, with one example of a computer described and depicted in FIGS. **1** and **5**. A computer-readable medium may comprise a computer-readable storage medium that may be any media or means that can contain or store the instructions for use by or in connection with an instruction execution system, apparatus, or device, such as a computer.

[0062] Below are provided further description of various non-limiting, exemplary embodiments. The below-described exemplary embodiments may be practiced in conjunction with one or more other aspects or exemplary embodiments. That is, the exemplary embodiments of the apparatus, such as those described immediately below, may be implemented, practiced or utilized in any combination (e.g., any combination that is suitable, practicable and/or feasible) and are not limited only to those combinations described herein and/or included in the appended claims.

[0063] In one exemplary embodiment, a method comprising reading out first lines of pixels of a sensor, when the first lines are read out in a sequence of the first lines in a first direction along the sensor reading out different second lines of the pixels of the sensor, when the second lines are read out in a sequence of the second lines in a different second direction along the sensor and interleaving the read outs from the first lines of pixels and the different second lines of pixels to form a new single image.

[0064] Conventional Flash/No-Flash imaging may use an image pair; one image with a flash and one image without a flash. However, the time difference between these two pair of images might be such big that the images have different content. Features as described herein allow for capture of a pair of Flash/No-Flash images within one frame with interleaving of the two images intelligently line-by-line (even lines and odd lines, some with flash and some with no flash). Time control with the lines between the flash illumination and the flash off may be optimised to cause as little as possible obscure to the two separate images caused by the transform from the no-flash to flash-on windows. Features as describe herein enable image capture within one single frame and, thus, provide equal, or almost equal, images for both flash and the no-flash images. Features as described herein may be used for even distribution and no overlapping, and compensate for problems caused by camera flash to images.

[0065] With features as described herein, since we have both a flash image and a no-flash image, if there are problems caused by the flash in the flash image, we have the non-flash image available to correct for the problem. Also, one can choose to turn-off the flash completely, and get a full resolution non-flash image if needed. In the 100 line example noted above and with respect to FIG. **7**:

[0066] odd number lines between lines 1-49 and even number lines between lines 52-100 form the no-flash image, and

[0067] even number lines between lines 2-50 and old number lines between lines 51-99 form the flash image.

[0068] A lower exposure may be needed for the flash images and, therefore, a provision of having different exposure settings for the rows to be exposed by the flash, in comparison to the ones which are not exposed by the flash may be provided.

[0069] In one example, one may go up to 1 ms as the time for which the flash is turned ON. 1 ms will mean that readout of about six to seven lines will have occurred, and those six to seven would not have the non-flash output. This problem can be circumvented by having multiple flashes, so as to provide the same intensity over a shorter duration of time. These multiple flashes may or may not be utilized on human faces, but can easily be exploited for any other scene. This ensures that the transition period can be brought down to 1 line, which may be preferred for this hardware to work perfectly in this 1 ms example.

[0070] It should be understood that the foregoing description is only illustrative. Various alternatives and modifications can be devised by those skilled in the art. For example, features recited in the various dependent claims could be combined with each other in any suitable combination(s). In addition, features from different embodiments described above could be selectively combined into a new embodiment. Accordingly, the description is intended to embrace all such alternatives, modifications and variances which fall within the scope of the appended claims.

What is claimed is:

1. A method comprising:

reading out first lines of pixels of a sensor, where the first lines are read out in a sequence of the first lines in a first direction along the sensor;

reading out different second lines of the pixels of the sensor, where the second lines are read out in a sequence of the second lines in a different second direction along the sensor; and

interleaving the read outs from the first lines and the second lines.

2. The method of claim **1** wherein reading out the first lines of pixels and the different second lines of pixels starts at substantially a same time.

3. The method of claim **1** wherein the first lines of pixels are non-adjacent lines of pixels and the second lines are adjacent to first lines forming an alternating sequence of the first and second lines of pixels.

4. The method of claim **1** wherein:

the readout sequence of the first lines starts at a first edge of the sensor and progresses toward an opposite second edge of the sensor, and

the readout sequence of the second lines starts at the opposite second edge of the sensor and progresses toward the first edge of the sensor,

such that the first lines of pixels and the different second lines of pixels are read out sequentially in substantially opposite directions.

5. The method of claim **4** wherein a flash occurs at a predetermined time such that a plurality, but not all, of the first lines of pixels and a plurality, but not all, of the different second lines of pixels are being exposed when the flash occurs.

6. The method of claim **5** wherein the flash occurs at least one of:

when exposure of substantially half of the first lines has ended and exposure of a remainder of the first lines